

REMARKS

Applicant and the undersigned are most grateful for the time and effort accorded the instant application by the Examiner. The Office is respectfully requested to reconsider the objections and rejections present in the outstanding Office Action in light of the following remarks.

Claims 1-17 were pending in the instant application at the time of the outstanding Office Action. Of these claims, Claims 1, 4, 5, 7, 8, and 10-17 are independent claims; the remaining claims are dependent claims. Applicants intend no change in the scope of the claims by the changes made by these amendments. It should also be noted these amendments are not in acquiescence of the Office's position on allowability of the claims, but merely to expedite prosecution.

Claims 1-7, 8-10 and 10-12 stand rejected under 35 USC § 101 for not specifically reciting a practical application and merely reciting the steps of allocating instructions or for being directed to non-statutory subject matter. This rejection is respectfully traversed. The claims in contention contain limitations directed to the use of registers in computers, which are well-known in the art of computers to be vital parts of CPUS as special high-speed storage areas within the CPU. It is thus apparent that these claims are not merely a process of allocating instructions, but rather a practical method that utilizes well-known parts of a computer.

Claims 1-17 stand rejected under 35 USC § 102(b) as being anticipated by Wallace et al. (hereinafter "Wallace"). Reconsideration and withdrawal of this rejection

is respectfully requested. Among the many distinctions between the instant invention and Wallace, three main distinctions will be discussed below.

As best understood, Wallace appears to be directed to a method that uses pseudo-registers with fixed names for specific operations. Permutations of the register stack caused by the operation of instructions that do push and pop stack operations are tracked by a register stack state that maps the pseudo-registers to stack registers. Stack registers are referenced by their offsets into the register stack.

This contrasts with present invention, in which live registers are allocated from the bottom of a stack, and constitutes a first major distinction between Wallace and the present invention. The Office Action asserts that the “bottom-to-top” traversal of the stack normalization procedure meets the claim limitations of allocating registers from the bottom of the stack. However, it is clear that this traversal does not affect the allocation of live registers, and in fact, there is no teaching or suggestion in Wallace to allocate live registers from the bottom of the register stack.

The second major distinction between Wallace and the instant invention is illuminated in the differences between the maintenance of the register stack by Wallace and by the instant invention. Wallace discusses moving to memory values that are currently contained in the registers. This is in stark contrast to the present invention. The instant invention copies the registers residing in the register stack, to free registers located at the bottom of the register stack. Further, the instant invention only frees these registers while there is a vacancy in operation resources. There is no teaching or suggestion in

Wallace of this type of freeing of the registers, and moreover, no teaching or suggestion of freeing registers only during vacancies in operation resources.

The third major distinction between the instant invention and Wallace is with regards to restoring the register image to a state before reallocation when a different procedure is called in a predetermined procedure. The Examiner asserts that the normalization of the register stack is interpreted to be equivalent to restoring a register image of a stack to a previous state. However, as is well-known in the art, and stated in Wallace, there is no restoration of register images involved in normalization of a register stack. Rather, registers are normalized when it is determined that their values are “dead”, which is in stark contrast to restoring a register image of a stack when a different procedure has been called. It is respectfully submitted that Wallace does not teach or suggest restoring a register image as taught by the present invention.

It is respectfully submitted that Wallace clearly falls short of present invention (as defined by the independent claims) in that, *inter alia*, it does not disclose "performing mapping between said logical register and physical registers, so that said physical registers that are live at a procedure call in said program to be compiled are allocated from the bottom of the register stack" as asserted in the Office Action. Additionally, it is respectfully submitted that Wallace does not disclose “upon the calling of the procedure, so long as there is a vacancy in operation resources, copying said registers residing in the register stack, to free registers located at the bottom of said register stack” as asserted in the Office Action. Further, it is respectfully submitted that Wallace does not disclose

“upon the return from said different procedure, restoring the register image to the state immediately before the reallocation.”

Accordingly, Applicant respectfully submits that the applied art does not anticipate the present invention because, at the very least, “[a]nticipation requires the disclosure in a single prior art reference of each element of the claim under construction.” *W.L. Gore & Associates, Inc. v. Garlock*, 721 F.2d 1540, 1554 (Fed. Cir. 1983); *see also In re Marshall*, 198 U.S.P.Q. 344, 346 (C.C.P.A. 1978).

In view of the foregoing, it is respectfully submitted that Independent Claims 1, 4, 5, 7, 8, and 10-17 are in condition for allowance. By virtue of dependence from what are believed to be allowable Independent Claims 1, 4, 5, 7, and 8, it is respectfully submitted that Claims 2-3, 6, and 9 are also presently allowable. Notice to the effect is hereby earnestly solicited.

/

/


/

/

/

In summary, it is respectfully submitted that the instant application, including Claims 1-17, is presently in condition for allowance. Notice to the effect is hereby earnestly solicited. In the unlikely event there are any further issued in this application, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,



Stanley D. Ference III
Registration No. 33,879

Customer No. 47049
FERENCE & ASSOCIATES
409 Broad Street
Pittsburgh, Pennsylvania 15143
(412) 741-8400
(412) 741-9292 - Facsimile

Attorneys for Applicants